Post-Disaster Temporary Shelters in Banda Aceh, Indonesia

Designing Culture-Conscious, Structurally Sound Shelters for Post-Tsunami Survivors

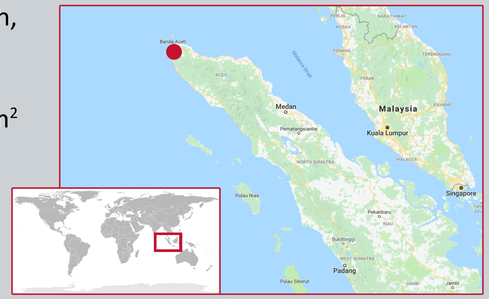
By Derek Comeau, Lucas Falsarella Guerreiro, Veronica Gurnawan, and Kai Yeaton

Abstract

After the events of the 2004 Indian Ocean tsunami, Aceh, Indonesia found itself wholly unprepared for the resulting devastation. The tsunami left over 170,000 people killed and destroyed most of Banda Aceh, the capital city of Indonesia's most religiously conservative province. This project will go into our main vision of a suitable shelter concept: a temporary housing structure that accommodates the large, matrilocal family units of indigenous Acehnese people. Using imported materials and locally harvested bamboo, this housing project is built on a system of cooperation amongst villages and companies and maximizes the community aspect of everyday Acehnese life.

Background

Location: Banda Aceh, Indonesia
Population: 223,446
Density: 3641.6 p/km^2 (2010)



Location of Banda Aceh, Source: Google Maps

Cultural Aspects	Physical Aspects
Gampongs (Villages) made up of 50-100 houses.	Tropical climate: Humid, warm, and high levels of preciptation.
Matrilocal families; formation of large family hubs.	Region is affected by tsunamis, earthquakes, and floods.
97% of Banda Aceh identifies as Muslim.	Coastal region surrounded by high elevation areas.
Community life centered around public and religious spaces.	Rainy from November to March, dry from April to October

The 2004 Tsunami

- 9.2 magnitude earthquake in the Indian Ocean.
- 170,000 casualties in Aceh.
- The country was not prepared to provide aid.
- Over 500 international groups responded.

Vale.Tsunami aftermath, Aceh, Indonesia, 2005

Analysis and Design Concept

The structure we designed is a temporary shelter meant for post-tsunami victims in Banda Aceh, Indonesia. The shelter is designed such that it is:

- Functional and structurally sound, while in accordance with local tastes and values.
- Raised above the grade to be flood-resistant.
- Capacity of 9 people.
- Walls and roof composed of locally sourced bamboo.

Possible location for project, Source: Google Maps

Precedent Study

Sumita Housing Reconstruction Efforts In Rikuzentakata, Japan

- Temporary shelters organized in an organic way that "hugs" the landscape instead of develops it.
- Developing pre-existing relationships amongst villages, lumber companies, and the government.
- Use prefabricated materials.

Reference

Fitrianto, A. (2012, September 21). Banda Aceh, Indonesia Integrated People-Driven Reconstruction. Retrieved September 27, 2017, from http://www.architectureindevelopment.org/project.php?id=297

Aceh. (n.d.). Retrieved September 27, 2017, from http://www.newworldencyclopedia.org/entry/Aceh#Culture

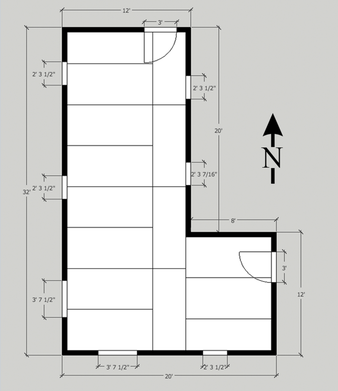
Statistics Indonesia (2015). Average Household Size by Province, 2000-2015 (Indonesia). Retrieved from https://media.neliti.com/media/publications/51233-ID-rata-rata-banyaknya-anggota-rumah-tangga_EUmj8j7.pdf

Vale, L., Shamsuddin, S., & Goh, K. (2014, December 01). Tsunami 10: Housing Banda Aceh After Disaster. Retrieved September 27, 2017, from https://placesjournal.org/article/tsunami-housing-banda-aceh-after-disaster/

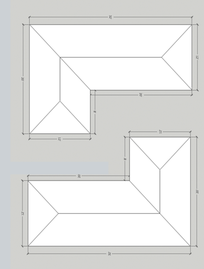
Steinberg, F. (2007). Housing reconstruction and rehabilitation in Aceh and Nias, Indonesia—Rebuilding lives. Habitat International. 1, 150-166.

Drawings

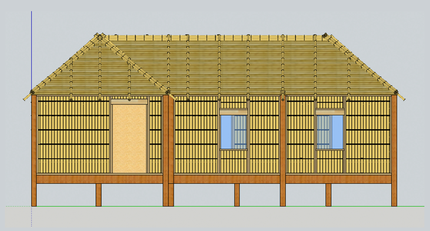
Perspective Drawing



Floor Plan
Scale 1:60



Placement Plan
Scale 1:120



West Elevation
Scale 1:60

South Elevation
Scale 1:60